

WHAT IS CLAIMED IS:

1. A thermosetting in-mold coating composition curable at a temperature below 300° F, said in-mold coating composition comprising:

- from about 140 to about 325 parts by weight of a polymerizable resin;
- from about 1 to about 4 parts by weight of a promoted peroxide comprising a tertiary organic perester;
- from about 1 to about 6 parts by weight of a polymer-bound catalyst comprising a transition metal physically bound to a polymeric composition; and
- from about 0.2 to about 2 parts by weight of an amine synergist comprising at least one aromatic tertiary amine.

2. The in-mold coating composition of claim 1, wherein the polymerizable resin comprises:

- 100 parts by weight of a polyacrylate monomer;
- from about 10 to about 60 parts by weight of a urethane acrylate oligomer; and
- from about 30 to about 165 parts by weight of one or more ethylenically unsaturated monomers.

3. The in-mold coating composition of claim 2, wherein the one or more ethylenically unsaturated monomers comprises a vinyl-substituted aromatic monomer and a hydroxy alkyl(meth)acrylate monomer.

4. The in-mold coating composition of claim 3, wherein the polyacrylate monomer is ethoxylated bisphenol A.

5. The in-mold coating composition of claim 4, wherein the vinyl-substituted aromatic monomer is styrene, and wherein the hydroxy alkyl(meth)acrylate monomer is hydroxy ethyl methacrylate.

6. The in-mold coating composition of claim 1, wherein the promoted peroxide further comprises an enolizable ketone.

7. The in-mold coating composition of claim 6, wherein the tertiary organic perester is tert-butyl perbenzoate.

8. The in-mold coating composition of claim 1, wherein the transition metal is cobalt.

9. The in-mold coating composition of claim 1, wherein the aromatic tertiary amine is N-Methyl-N-Hydroxyethyl-p-Toluidine.

10. The in-mold coating composition of claim 9, wherein the amine synergist further comprises N, N-Bis-(2-Hydroxyethyl)-p-Toluidine and N, N-Dimethyl-p-Toluidine.

11. The in-mold coating composition of claim 1, further comprising from about 50 to about 150 parts by weight filler, and from about 5 to about 20 parts by weight conductive carbon black.

12. A thermosetting in-mold coating composition comprising:

100 parts by weight of a polyacrylate monomer;

from about 10 to about 60 parts by weight of a urethane acrylate oligomer;

from about 30 to about 165 parts by weight of at least one ethylenically unsaturated monomer;

from about 1 to about 4 parts by weight of a promoted peroxide comprising an organic peroxide and an enolizable ketone;

from about 1 to about 6 parts by weight of a polymer-bound catalyst comprising a transition metal physically bound to a polymeric composition; and

from about 0.2 to about 2 parts by weight of an amine synergist comprising a mixture of an N-alkyl-N-hydroxyalkyl-p-toluidine and at least one

other aromatic tertiary amine different from the N-alkyl-N-hydroxyalkyl-p-toluidine.

13. The in-mold coating composition of claim 12, wherein the organic peroxide is a tertiary organic perester.

14. The in-mold coating composition of claim 13, wherein the N-alkyl-N-hydroxyalkyl-p-toluidine comprises N-Methyl-N-Hydroxyethyl-p-Toluidine and the at least one other aromatic tertiary amine comprises N, N-Bis-(2-Hydroxyethyl)-p-Toluidine.

15. The in-mold coating composition of claim 14, wherein the amine synergist further comprises N, N-Dimethyl-p-Toluidine.

16. The in-mold coating composition of claim 12, wherein the transition metal of the polymer-bound catalyst comprises cobalt.

17. The in-mold coating composition of claim 16, wherein the polymeric composition of the polymer-bound catalyst has a peak melting temperature between about 104° F and about 212° F.

18. An in-mold coating method comprising the steps of:
providing a charge comprising a thermosetting resin and reinforcing fibers;
molding the charge into a desired shape at an elevated pressure;
at least partially curing the charge to form a substrate;
coating the substrate with a thermosetting in-mold coating composition; and
curing said in-mold coating composition at a temperature less than 300° F;
wherein said in-mold coating composition comprises:

from about 140 to about 325 parts by weight of a polymerizable resin;

from about 1 to about 4 parts by weight of a promoted peroxide

comprising a tertiary organic perester;

from about 1 to about 6 parts by weight of a polymer-bound catalyst comprising a transition metal physically bound to a polymeric composition; and from about 0.2 to about 2 parts by weight of an amine synergist comprising at least one aromatic tertiary amine.

19. The method of claim 18, wherein the in-mold coating composition is cured at a temperature less than about 212° F.

20. The in-mold coating composition of claim 18, wherein the polymerizable resin comprises:

100 parts by weight of a polyacrylate monomer;
from about 10 to about 40 parts by weight of a urethane acrylate oligomer;
from about 40 to about 100 parts by weight of a vinyl-substituted aromatic monomer; and
from about 2 to about 10 parts by weight of a hydroxy alkyl(meth)acrylate monomer.

21. The in-mold coating composition of claim 18, wherein the aromatic tertiary amine is N-Methyl-N-Hydroxyethyl-p-Toluidine and the promoted peroxide further comprises an enolizable ketone.